

# **ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS**

## **RESEARCH AND COOPERATIVE EXTENSION**

**Langston University**

**Reporting Period: October 1, 2005 – September 30, 2006**

**Certification:**

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## A. Planned Programs

<b>National Goal 1</b>
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**An agricultural system that is highly competitive in the global economy.** Through research and education, empower the agricultural system with knowledge that will improve the competitiveness in domestic production, processing, and marketing.

### Overview

Langston University Research and Extension continue to carry out programs/projects designed to make our clientele highly competitive in the global economy of a world with ever shrinking boundaries. Research personnel are addressing nutritional needs of goats. Knowledge regarding nutritional needs of goats lags far behind the knowledge of cattle and sheep nutrition. Nutritional needs of goats have impacts in many areas such as reproduction, breed or biological type, internal parasitism, growth rate and overall management. Results from this research will help goat producers increase the level and efficiency of their goat herds' productivity.

A very important factor in meat goat production is the growth rate efficiency of kids. Langston University Cooperative Extension personnel have developed a meat buck performance test to determine growth rate efficiency in goat kids. The test allows for identification of genetically superior meat goat lines. Use of genetically superior meat goat lines has helped some Oklahoma producers become more competitive in meat goat production.

In the area of aquaculture, Langston University Researchers are working to make small fish farms in Oklahoma and other parts of the United States more competitive. Increasing value-added parameters in production by culturing fish of optimum size for specific markets can help small fish producers increase their levels of productivity.

### **Total FY 2006 Expenditures and Full-time Equivalents (FTE) for Reported Projects**

**Smith-Lever and Evans-Allen: \$ 301,026.32                      FTE: 8.24**

### **Key Theme – Animal Production Efficiency (Research)**

- a. Meat goat production in the U.S. has been increasing markedly in recent years. Though production of meat goats can be profitable simply in terms of marketing products in a manner similar to that of beef cattle and sheep, meat goats offer other attributes such as consumption of many plant species common in low-input pastures not readily consumed by cattle or sheep. This makes co-grazing of goats with other ruminant species a consideration, as well as their use to increase grass prevalence in pastures for subsequent grazing of species such as

cattle. Many grass pastures in Oklahoma are managed in a low-input fashion, with little or no use of fertilizers or herbicides. This can result in production of forage relatively low in nutritive value and particularly low in protein. Goats have the capacity to consume forage low in nutrients and still produce high quality milk and meat.

- b. Impact** – Our research and extension efforts in such areas as grazing management strategies, sustainable methods of internal parasite control, preferred diet formulation and feeding practices have been valuable to our producers. Our programs have reached goat farmers in Oklahoma, the Southwest Region, other parts of the nation and other countries. Greater farm profits for producers have resulted from the use of our findings and methods of goat production, management and nutrition.
- c. Source of Federal Funds:** Evans-Allen  
Smith-Lever
- d. Scope of Impact** – Oklahoma/United States/Other Countries.

#### **Key Theme – Aquaculture (Research)**

- a.** Langston University aquaculture researchers work to make the small fish farms in Oklahoma and other parts of the United States more competitive. We previously found an underserved market for retail sales of food sized fish to live fish markets. Production of fish for live fish markets in Oklahoma and the surrounding region helped to stabilize fish prices. We modified our culture methods to produce the optimum sized fish for these markets. The culture methods require production of discrete size classes of fish to obtain specific target weights of marketable fish. Fuel costs (diesel, electricity) have increased sharply recently, but feed cost continues as the major expense associated with channel catfish production. Reduction in unit feed cost is the most efficient way to improve profit. During FY 2006, we reproduced the continuous production systems that Oklahoma farmers and other commercial producers use so that our research results are more applicable to their farms.
- b. Impact** - Ponds were stocked with 15,600 channel catfish/ha. The pond population was comprised of three discrete size classes of catfish: 200 mm fingerlings, 300 mm stockers, and 400 mm sub-marketable fish. Fish were fed commercial diets containing 32% protein. By increasing harvest frequency from an annual fall harvest to semi-annual spring and fall harvest, the quantity of fish  $\geq 0.8$  kg was increased by 20%. Total revenues from the sum of increased production and reduced feed cost was \$5,860/ha. The decreased feed cost (\$0.15/kg) more than offset the increased cost of an additional harvest (\$.066/kg). This information has been shared with producers and some have verified increased profits by using these methods.
- c. Source of Federal Funds:** Evans-Allen
- d. Scope of Impact** – Oklahoma/United States

### **Key Theme – Animal Production Efficiency (Extension)**

- a. The use of superior sires is imperative in improving the genetic composition of breeding stock. Artificial insemination has long been used in the dairy cattle industry and is a simple technology that goat producers can acquire. However, opportunities for goat producers to obtain the necessary skills via formal and practical instruction are not widespread. Langston University has instituted a practical workshop for instruction in artificial insemination in goats. Producers are instructed in the anatomy and physiology of the female goat, estrus detection and handling and storage of semen. Producers participate in a hands-on insemination exercise. An understanding of the anatomy and physiology of the goat enables the producer to devise seasonal breeding plans and troubleshoot problem breeders. An understanding of estrus detection enables the producer to effectively time inseminations for favorable conditions for conception and to efficiently utilize semen. An understanding of semen handling and storage enables the producer to safeguard semen supplies, which can be scarce and costly. In 2006, AI workshops were held on 09/11/06 at the Langston University campus, on 10/07/06 at the county fairgrounds in Tahlequah and on 10/28/06 at the county fairgrounds in Antlers. Forty-four participants enrolled in the three workshops; 18 at Langston University, 15 in Tahlequah and 21 in Antlers.
- b. **Impact** - The experience of actually inseminating a female goat enables producers to practice the knowledge that they have gained. The acquisition of these inseminating skills will allow producers the use of genetically superior sires in their herds that they normally would not have access to. It also allows producers to save money by conducting the inseminations themselves instead of hiring an inseminator.
- c. **Source of Federal Funds:** Smith-Lever
- d. **Scope of Impact-** Oklahoma/United States

<p><b>National Goal 2</b></p>
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**A safe and secure food and fiber system.** To ensure an adequate food and fiber supply and food safety through improved science-based detection, surveillance, prevention, and education.

#### **Overview**

Food safety and food security are high on the list of food concerns for the American Public. Langston University has a pilot creamery and a milk products laboratory where goat milk is tested and products such as goat cheese and other value-added products are produced from goat milk.

Langston University has also conducted studies on the defenses against internal parasites in goats. The greatest limitation to goat meat production in many parts of the United States is effective control of internal parasites. The overuse of dewormers has resulted in development of dewormer resistance in some goat herds.

**Total FY 2006 Expenditures and Full-time Equivalents (FTE) for Reported Projects**

**Smith-Lever: \$ 30,165.70**

**FTE: 2.1**

**Key Theme – Food Safety (1) (Extension)**

- a. In 2006, workshops were conducted on goat milk cheese and goat milk soap production. Along with teaching participants about cheese and soap production, food safety techniques were also taught to producers.
- b. **Impact** – Workshop participants gained new skills for adding value to their goat milk. This opened up new opportunities and new markets for some goat producers.
- c. **Source of Federal Funds:** Smith-Lever
- d. **Scope of Impact** – Oklahoma

**Key Theme – Food Safety (2) (Extension)**

- a. An education program was initiated to train producers in integrated pest management principles to control internal parasites. The pest management program contains lessons on: use of management practices for parasite prevention, monitoring individual animals to determine when intervention is necessary and using dewormers only when necessary.

Producers were trained at day-long workshops held on Saturdays. In 2006, we conducted 8 day long workshops around the state with a total of 240 people in attendance. All were certified in the use of the FAMACHA card and fecal egg counting. In addition, 4 hour long training sessions were conducted around the state as part of meetings on goat management and total attendance was 630 people.

- b. **Impact** - Many producers were glad to learn effective management practices as a first line of defense against internal parasites. Producers reported less use of dewormer and fewer deaths of goats. Also, producers recognized dewormer resistance and called for assistance when it was observed. Producers learned that there was a genetic component of resistance and that culling the most susceptible animals will help. Producers were appreciative to receive definitive information on internal parasites and feel that they now know how to better manage the problem.

- c. **Source of Federal Funds:** Smith-Lever
- d. **Scope of Impact** – Oklahoma/United States

<b>National Goal 3</b>
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**A healthy, well-nourished population.** Through research and education on nutrition and development of more nutritious foods, enable people to make health promoting choices.

**Overview**

Many chronic diseases can be prevented by changing lifestyle choices. Positive choices may include quitting smoking, regular health screening, proper physical activity and healthy eating habits. Langston University's Family and Consumer Sciences Program provides current, user-friendly nutrition information to families and community-based organizations.

**Total FY 2006 Expenditures and Full-time Equivalents (FTE) for Reported Projects**

**Smith-Lever: \$ 32,200.00                      FTE: 0.6**

**Key Theme – Human Nutrition (Extension)**

- a. In collaboration with other health educators, advocates and stakeholders, current nutritional information such as the new My Pyramid food guide was presented and explained. Seminars, food preparation and tasting sessions, a walk-a-thon and youth nutrition sessions were conducted.
- b. **Impact** – Participants have stated that as a result of these nutrition activities they have increased their amount of physical activity, started consuming more fruits and vegetables and modifying the way they prepare their food. Some program participants stated that not only have they improved their diets but also learned to save money when purchasing food. Participants have stated that they will promote the healthy habits they have acquired among family members and colleagues.
- c. **Source of Federal Funds:** Smith-Lever
- d. **Scope of Impact** – Oklahoma

<b>National Goal 4</b>
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**Greater harmony between agriculture and the environment.** Enhance the quality of the environment through better understanding of and building on agriculture's and forestry's complex links with soil, water, air, and biotic resources.

**Overview**

Ponds and their watersheds are natural resources that are often under-utilized and mismanaged. Individual and community pond owners are pursuing opportunities to improve recreational uses of their ponds. Pond owners are also interested in environmental issues such as pond aesthetic value through aquatic vegetation control, erosion control, ornamental planting, clearing of muddy water and water pond maintenance during periods of drought.

**Total FY 2006 Expenditures and Full-time Equivalents (FTE) for Reported Projects**

**Smith-Lever: \$ 30,000.00 FTE: 0.95**

**Key Theme – Sustainable Agriculture (Extension)**

- a. National goals were addressed through extension education efforts aimed at promoting an understanding of watershed impacts on ponds and streams. Pond owners were shown impacts of farming and urban fertilization on quality of pond water and aquatic life. Homeowners were educated on the effects of lawn and garden over-fertilization on community ponds and property values. Particular emphasis was placed on management of ponds during drought.
- b. **Impact** – The program impacted clientele directly by showing them ways to conserve and utilize water in ponds during times of drought. This is important to livestock producers in the state. Lack of water or poor quality water impacts livestock health and can result in herd sales if water supplies are inadequate. Stakeholders asked for and were given information and personal directions on sealing leaking ponds, water loss prevention and methods of increasing water capture from available runoff. As a result of information provided, many pond owners renovated their ponds and improved water holding capacity while the ponds were low or empty.
- c. **Source of Federal Funds:** Smith-Lever
- d. **Scope of Impact:** Oklahoma

<b>National Goal 5</b>
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**Enhanced economic opportunity and quality of life for Americans.** Empower people and communities, through research-based information and education, to address economic and social challenges facing our youth, families, and communities.

### Overview

Langston University Cooperative Extension personnel are implementing programs to enhance economic opportunities and quality of life for Americans. A quality education is perhaps the greatest avenue for enhancing future economic opportunities for youth. Two of the most glaring obstacles to many youth becoming high achievers in school are poor reading and speaking skills. The Cooperative Extension 4-H reading program is achieving success in enhancing youth participants' reading and speaking skill levels. These enhancements are taking place through 4-H after-school enrichment sessions and a 4-H summer reading camp.

### Total FY 2006 Expenditures and Full-time Equivalents (FTE) for Reported Projects

**Smith-Lever: \$ 26,000.00 FTE: 2.4**

#### **Key Theme – Literacy (Extension)**

- a. The Langston University Cooperative Extension 4-H Youth Development Extension Specialists conduct educational programs and provide hands-on developmental experiences that help Oklahoma children and youth enhance their quality of life. Our educational programs are especially planned to include individuals who may otherwise be unable to participate in extended educational opportunities. The annual Literacy in Action 4-H Summer Reading Camp is one of several programs offered to students in kindergarten through fifth grade during the months of June and July. The Camp is designed to help participants learn developmental concepts that strengthen their ability to maintain their academic capabilities and enhance their overall well-being. The program consists of five (5) series of rotational sessions. The series include reading, writing, mathematics, food and nutrition, physical fitness and recreation. Within specific series students also receive training in character education, public speaking, music, drawing, painting, beginners sewing, and dance movement.
- b. **Impact** – In 2006, a pre-test was administered at the outset of the program. After seven (7) weeks of training, participants were administered a post-test. Eighty-two percent demonstrated an improvement in their reading comprehension capabilities. Seventy-eight percent showed improvement in understanding mathematical concepts and operations. One hundred percent of the participants demonstrated improved physical fitness endurance. All participants showed improved character development. Nineteen percent demonstrated improved ability to read and speak aloud in front of their parents, peers, family members and

instructors during the end of program's "Show Case" presentation. Several weeks after the program, a parent stated that she bought her daughter a sewing machine and her daughter made several garments as a result of her participation in the beginners sewing program. All participating parents recommend continuation of the reading program. They indicated that it is extremely beneficial to their children and their community.

**c. Source of Federal Funds:** Smith-Lever

**d. Scope of Impact** – Oklahoma

## **B. Stakeholder Input Process**

### **1. Actions taken to seek stakeholder input that encourage their participation**

Inputs on our Research and Extension Programs are continually being requested and received from stakeholders. Various advisory committees, community members and association representatives provide pertinent comments and advice on ways to strengthen our programs and make them more viable for our clientele.

Actions taken to obtain stakeholder input include:

- (i)** Interaction with stakeholders at field days and workshops
- (ii)** Newsletters
- (iii)** Phone calls
- (iv)** Our website
- (v)** On-farm visits
- (vi)** Stakeholders surveys
- (vii)** Advisory committees

**2. A brief statement of the process used to identify individuals and groups who are stakeholders and to collect input from them**

(a) Stakeholder Identification

A listing is compiled of people who are involved in one or more of the following:

- (i) Call us
- (ii) Write us
- (iii) Contact us via e-mail
- (iv) Attend our goat and aquaculture field day
- (v) Attend our meetings and workshops
- (vi) People who request to have their name added to our newsletter mailing list
- (vii) People who contact us via our website
- (viii) People identified by an advisory committee and/or community leaders
- (ix) Clientele who enroll in our specialty services such as our Dairy Herd Improvement laboratory program.
- (x) Associations such as the American Boer Association, American Meat Goat Association, American Dairy Goat Association, Green County Dairy Goat Association, Red Plains Dairy Goat Association, Tennessee Goat Producers Association, United States Boer Goat Association, Archer Daniels midland Corporation, BASF, Sweetlix Corporation, Purina Mills and others.
- (xi) Also, some state and government agencies interested in working in the area of small ruminants have been identified. They are included but are not limited to the Oklahoma Department of Agriculture, USDA Natural Resource Conservation Service, USDA ARS, Appalachian Farming Systems Research Center, USDA ARS Dale Bumpers Small Farm Center, and others.
- (xii) Tribal government agencies that have expressed a desire to work in the area of small ruminants have been identified through contacts and they include the Osage, Cherokee, Greater Seminole, Sac and Fox and Choctaw Nations.

- (xiii) Stakeholders are also identified through interaction with colleagues at professional meetings

**(b) Collection of Stakeholder Input**

- (i) The annual Goat Field Day is held to educate producers, highlight and disseminate research findings. The one-day program offers general concern/information presentations during the morning session and practical workshops geared towards dairy, fiber, or meat production in the afternoon. At the end of the morning session, attendees are requested to complete an evaluation assessing their satisfaction with the general session. Attendees are specifically asked what they liked the best, what they liked the least, and topic ideas for future field days. At the end of each afternoon session, attendees are also requested to complete an evaluation of the session that they just attended.
- (ii) For buck performance testing, E (Kika) de la Garza American Institute for Goat Research (GIGR) personnel work with Oklahoma Milk Goat Association members to make any adjustments to the performance test that are necessary during the planning stage each year. In addition, feedback is sought from producers who have enrolled a buck in the performance test.
- (iii) For the artificial insemination workshops, at the end of the training session participants are requested to complete an evaluation assessing their satisfaction with the workshop. Participants are specifically asked what they liked the best, and what they liked the least. Evaluations are summarized and tabulated and the results are disseminated to presenters and GIGR administrators.
- (iv) For the Langston University Goat Dairy Herd Improvement (DHI) Laboratory, feedback on service is solicited from clientele (dairy goat producers), the American Dairy Goat Association, the Green County Dairy Goat Association and the Red Plains Dairy Goat Association primarily in the form of telephone surveys.
- (v) E-mail and website stakeholder inputs are collected for use in strengthening our efforts to meet the public's needs.
- (vi) 4-H programs are evaluated and clientele inputs are collected at the close of meetings and workshops.
- (vii) Stakeholder input is requested and received from the parents of students participating in our Summer Literacy Program.

### **3. A statement of how collected stakeholder input is considered**

In general, our research and extension efforts are stakeholder-driven. More specifically, listed below are ways stakeholder input is used.

- (i) 4-H programs and activities are tailored to meet the stakeholder's needs.
- (ii) Aquaculture fact sheets and field day topics are designed to meet the interests and concerns of our stakeholders.
- (iii) From the annual field day, evaluations are summarized and tabulated and the results are disseminated to presenters, administrators, and GIGR colleagues. In addition to the evaluations, GIGR personnel circulate among the attendees and discuss topics of interest and solicit feedback. Suggestions for topics of future field days are reviewed and several have been incorporated into subsequent field days. Examples of feedback incorporated in field days are a youth program to occupy young children while their parents attend morning and afternoon sessions, a fitting and showing workshop for older youth and parents who are interested in showing goats, utilization of portable toilets to alleviate the shortage of facilities for females, and the rearrangement of the morning registration process and location.
- (iv) For the buck performance test, format and report parameters for the midpoint and final reports have been changed at the suggestions of goat producers. Minor changes have been made in the performance test at the request of the American Boer Goat Association and the International Boer Goat Association, to whom final reports are sent.
- (v) Evaluations on the artificial insemination workshops are summarized and tabulated and the results are disseminated to presenters and GIGR administrators. Identified strengths of the workshop are further strengthened and identified weaknesses are addressed.
- (vi) Inputs received during the presentation of research findings at scientific meetings and from the peer review of scientific manuscripts or grant proposals often lead to experimentation in new areas or with different techniques or with new collaborators.

**C. Program Review Process**

There have not been any significant changes in the program review process since submission of the 5-year Plan of Work (1999-2004)

**D. Evaluation of the Success of Multi and Joint Activities.****Dairy Herd Improvement Association Laboratory**

Currently, the Langston University Goat Dairy DHI laboratory is serving a 27 state area that includes a majority of the eastern states. There are 88 herds in these 27 states enrolled in the DHI program, which reflects a 6% enrollment (83 herds) increase over the previous year. The average herd size is 12 animals, which reflects an 11% increase in herd size (11 animals) over the previous year. However, this herd size is significantly smaller than the herd size average for the five other processing centers. For those interested in becoming a Langston University goat DHI tester, training is available either in a formal classroom setting or through a 35-minute video tape. Annually, every tester is required to attend the DHI training session or view the tape and they are required to take a test on the training material. Upon completion of the DHI training and successfully passing the test, the milk tester can start performing monthly herd tests. Currently, there are 185 DHI testers certified through the Langston University DHI program.